Space Weather Forecast

Issued on Friday, 07 July 2023 at 13:38 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of R1/R2 Radio Blackouts. Minor to Moderate Geomagnetic Storms possible today with CME arrival.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Moderate, with one Moderate flare observed, from a region located in the southwest. There are ten sunspot regions on the disc in total, nine of which are numbered. The largest region is in the southeast quadrant, but currently appears stable. A filament eruption from the northeast around 06/2100 UTC has resulted in a Coronal Mass Ejection (CME), however this does not appear to be Earth-directed from available imagery.

Solar Wind / Geomagnetic Activity: The solar wind as observed at L1, has been at slightly elevated to elevated levels and is currently at 480 km/s. Magnetic field strength persisted at moderate levels with a declining trend in recent hours. The north-south component was predominantly weak, with geomagnetic activity mostly Quiet to Unsettled. In recent hours geomagnetic activity has become active probably indicative of the anticipated arrival of a CME that left the sun on 4 July.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is forecast, with a chance of Moderate flares. A number of regions rotating onto the visible disc, through the forecast period, may increase activity. There is a slight risk of a strong flare.

Solar Wind / Geomagnetic Activity: A CME which left the Sun 04 July appears to have reached Earth and solar winds will probably reach elevated levels perhaps strong for a time in the next couple of days due to a connection to coronal hole feature. Later in the forecast period a decline to slightly elevated speeds is expected. Geomagnetic activity is forecast to be Unsettled to Active with a risk of Minor or Moderate storms for the next couple of days, due to the CME, and to a lesser extend coronal hole influence. Through day 4 (10th) Quiet to Unsettled conditions are expected

Energetic Particles / Solar Radiation: Solar radiation has a slight chance of reaching the S1/Minor Storm threshold through the period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	30	5	1
Strong	G3	No	10	5	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	30	40	40
Very Active	R3 to R5 X	No	5	5	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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